

IN THE CLAIMS:

1.-14. (Cancelled)

15. (Original) The spacer of claim 28 wherein the shape memory polymeric material is selected from the group consisting of: polylactide, polyglycolide, poly(lactide-co-glycolide), polyurethane, poly(ethylene-co-vinyl acetate), poly(ethylene-co-propylene), poly(ethylene-co-propylene-co-dien-e), poly(.epsilon.-caprolactone), poly(.beta.-hydroxybutyrate), poly(.beta.-hydroxybutyrate-co-hydroxyvalerate), poly(methacrylate), poly(methyl methacrylate), poly(acrylate), and mixtures, copolymers and blends thereof.

16.-27. (Cancelled)

28. (Currently Amended) An expandable spacer for implantation between opposing endplates of adjacent vertebrae, said spacer comprising:

a cylindrical body extending along a vertical axis and composed of a shape memory polymeric material and comprising a cylindrical-shaped peripheral sidewall extending about said vertical axis and defining an interior cavity and vertebral bearing surfaces at defined by opposite ends surfaces of the cylindrical-shaped peripheral sidewall, said vertebral bearing surfaces defining openings in communication with the interior cavity, said body provided in a first configuration sized to overlay a first portion of a vertebral endplate wherein said body upon absorption of thermal energy expands to a second configuration sized to overlay a second portion of the vertebral endplate, said second portion having a greater area than the first portion; and

wherein the peripheral sidewall in the first configuration has a first lateral dimension and the vertebral bearing opposite end surfaces of the peripheral sidewall each define a first bearing surface area; and

wherein the peripheral sidewall in the second configuration has a second lateral dimension greater than the first lateral dimension and the vertebral bearing opposite end surfaces of the peripheral sidewall each define a second bearing surface area significantly greater than the first bearing surface area.

29. (Original) The spacer of claim 28 wherein the body is sized in the second configuration to extend across the entire surface of the vertebral endplate.

30. (Original) The spacer of claim 29 wherein the body is sized to overlay a portion of one of: a cervical, a thoracic, a lumbar, or a sacral vertebra.

31. (Original) The spacer of claim 29 wherein the peripheral wall contacts the apophyseal ring of the vertebral endplate.

32. (Withdrawn) The spacer of claim 28 wherein the body in the second configuration has a diameter selected to be between about 6 mm and about 50 mm.

33. (Withdrawn) The spacer of claim 32 wherein the body in the second configuration has a diameter selected to be between about 10 mm and about 16 mm.

34. (Withdrawn) The spacer of claim 33 wherein the body in the second configuration is sized to permit bilateral placement of two spacers in the same disc space.

35. (Original) The spacer of claim 28 wherein the body in the second configuration is sized to extend across only a portion of the vertebral endplate.

36. (Original) The spacer of claim 28 wherein the body in the second configuration is sized to permit bilateral placement of two spacers in the same disc space.

37. (Cancelled)

38. (Previously Presented) The spacer of claim 28 wherein the peripheral wall comprises at least one opening extending into the interior cavity.

39. (Previously Presented) The spacer of claim 28 comprising an osteogenic material disposed in the interior cavity.

40. (Original) The spacer of claim 39 wherein the osteogenic material is selected from the group consisting of: a bone morphogenic protein, a recombinant bone morphogenic protein, demineralized bone matrix, and mixtures thereof.

41. (Original) The spacer of claim 39 wherein the osteogenic material includes a carrier.

42. (Previously Presented) An expandable spacer for implantation between opposing endplates of adjacent vertebrae, said spacer comprising:

a body composed of a shape memory polymeric material and comprising a peripheral sidewall defining an interior cavity and vertebral bearing surfaces at opposite ends of the peripheral sidewall defining openings in communication with the interior cavity, said body provided in a first configuration sized to overlay a first portion of a vertebral endplate wherein said body upon absorption of thermal energy expands to a second configuration sized to overlay a second portion of the vertebral endplate, said second portion having a greater area than the first portion; and

wherein the peripheral sidewall in the first configuration has a first lateral dimension and a first sidewall thickness defining a first cross-sectional area; and

wherein the peripheral sidewall in the second configuration has a second lateral dimension greater than the first lateral dimension and a second sidewall thickness greater than the first sidewall thickness, the second sidewall thickness defining a second cross-sectional area significantly greater than the first cross-sectional area.

43. (Previously Presented) The spacer of claim 42 wherein the body is provided in an original configuration having an original cross-sectional area that is greater than the first cross-sectional area.

44. (Original) The spacer of claim 43 wherein the original cross-sectional area is greater than the second cross-sectional area.

45. (Cancelled)

46. (Previously Presented) The spacer of claim 28 wherein the body in the second configuration matingly conforms to the opposing endplates of the adjacent vertebrae.

47. (Withdrawn) The spacer of claim 28 wherein when the body is in the first configuration the peripheral sidewall is folded back on to itself.

48. (Withdrawn) The spacer of claim 47 wherein the peripheral sidewall in the second configuration is unfolded.

49. (Withdrawn) The spacer of claim 47 wherein the peripheral sidewall in the first configuration resembles a pleated sheet structure.

50. (Previously Presented) The spacer of claim 28 wherein the first configuration of the body comprises a compressed flattened configuration, and wherein the second configuration of the body comprises an expanded cylindrical configuration.

51. (Withdrawn) The spacer of claim 28 wherein the body in the first configuration defines a spirally wound cylinder.

52. (Withdrawn) The spacer of claim 51 wherein the body in the first configuration has a first cross-sectional area and in the second configuration has a second cross-sectional area greater than the first cross-sectional area.

53. (Withdrawn) The spacer of claim 51 wherein the body in the second configuration

is unwound.

54. (Withdrawn) The spacer of claim 51 wherein the body in the second configuration is substantially cylindrical.

55. (Withdrawn) The spacer of claim 51 wherein the body in the second configuration is elongate.

56. (Withdrawn) The spacer of claim 51 wherein the body in the second configuration is "C" shaped.

57. (Original) The spacer of claim 28 wherein the body exhibits a compressive modulus of between about 2 MPa and about 30 MPa.

58. (Original) The spacer of claim 57 wherein the body exhibits a compressive modulus of between about 8 MPa and about 15 MPa.

59. (Previously Presented) The spacer of claim 42 further comprising an osteogenic material disposed in the interior cavity.

60. (Original) The spacer of claim 59 wherein the peripheral sidewall comprises at least one opening extending into the internal cavity.

61. (Original) The spacer of claim 59 wherein the shape memory polymeric material is selected from the group consisting of: polylactide, polyglycolide, poly(lactide-co-glycolide), polyurethane, poly(ethylene-co-vinyl acetate), poly(ethylene-co-propylene), poly(ethylene-co-propylene-co-dien- e), poly(.epsilon.-caprolactone), poly(.beta.-hydroxybutyrate), poly(.beta.-hydroxybutyrate-co-hydroxyvalerate), poly(methacrylate), poly(methyl methacrylate), poly(acrylate), and mixtures, copolymers and blends thereof.

62. (Cancelled)

63. (Previously Presented) The spacer of claim 59 wherein the body in the second configuration is sized to extend across the entire surface of the vertebral endplate.

64. (Original) The spacer of claim 59 wherein the peripheral wall contacts the apophyseal ring of the vertebral endplate.

65. (Withdrawn) The spacer of claim 59 wherein the body in the second configuration has a diameter selected to be between about 6 mm and about 50 mm.

66. (Withdrawn) The spacer of claim 65 wherein the body in the second configuration has a diameter selected to be between about 10 mm and about 16 mm.

67. (Original) The spacer of claim 59 wherein the body has a height sized to be inserted into the disc space between adjacent vertebrae.

68. (Currently Amended) The spacer of claim 67 wherein the body has a height selected to be between about 3 and about 20 mm.

69. (Original) The spacer of claim 68 wherein the body has a height selected to be between about 4 and about 14 mm.

70. (Original) The spacer of claim 59 wherein the body exhibits a compressive modulus sufficient to withstand the biomechanical load exerted by the spinal column.

71. (Original) The spacer of claim 59 wherein the body exhibits a compressive modulus of between about 2 MPa and about 30 MPa.

72. (Original) The spacer of claim 59 wherein the body exhibits a compressive modulus of between about 8 MPa and about 15 MPa.

73.-76. (Cancelled)

77. (Withdrawn) The spacer of claim 59 wherein the peripheral sidewall in the first configuration the sidewall is folded back on to itself.

78. (Withdrawn) The spacer of claim 59 wherein the peripheral sidewall in the second configuration is unfolded.

79. (Original) The spacer of claim 59 wherein the body in the second configuration is sized to permit bilateral placement of two spacers within the same disc space.

80. (Currently Amended) ~~A system for treating a spinal defect, said system comprising:~~

~~the expandable spacer recited in claim 28, The spacer of claim 28 wherein said expandable spacer comprising comprises~~ a first expandable spacer; and
~~further comprising~~ a second expandable spacer comprising a second body composed of a shape memory polymeric material.

81. (Original) The system of claim 80 wherein the first and the second expandable spacers are composed of the same shape memory polymeric material.

82. (Original) The system of claim 80 wherein the second expandable spacer is provided in a third configuration and sized substantially the same as the first spacer in the first configuration.

83. (Original) The system of claim 82 wherein the second spacer expands to a fourth configuration upon absorption of energy and sized substantially the same as the first spacer in the second configuration.

84. (Previously Presented) An expandable spacer for implantation between opposing endplates of adjacent vertebrae, said spacer comprising:

a body composed of a shape memory polymeric material and comprising a peripheral sidewall defining an interior cavity and vertebral bearing surfaces at opposite ends of the peripheral sidewall defining openings in communication with the interior cavity, said body provided in a first configuration sized to overlay a first portion of a vertebral endplate wherein said body upon absorption of thermal energy expands to a second configuration sized to overlay a second portion of the vertebral endplate, said second portion having a greater area than the first portion; and

wherein the peripheral sidewall in the first configuration has a first lateral dimension and the vertebral bearing surfaces each define a first bearing surface area; and

wherein the peripheral sidewall in the second configuration has a second lateral dimension greater than the first lateral dimension and the vertebral bearing surfaces each define a second bearing surface area significantly greater than the first bearing surface area;

wherein said expandable spacer comprising a first expandable spacer; and

a second expandable spacer comprising a second body composed of a shape memory polymeric material, wherein the second expandable spacer is provided in a third configuration sized substantially the same as the first spacer in the first configuration, and wherein the second spacer expands to a fourth configuration upon absorption of energy and sized differently than the first spacer in the second configuration.

85.-103. (Cancelled)

104. (Previously Presented) The spacer of claim 42 wherein the first configuration of the body comprises a compressed flattened configuration, and wherein the second configuration of the body comprises an expanded cylindrical configuration.

105. (New) The spacer of claim 28 wherein the cylindrical-shaped peripheral sidewall extends continuously about said vertical axis.

106. (New) The spacer of claim 42 wherein said body comprises a cylindrical body extending along a vertical axis, and wherein the peripheral sidewall has a cylindrical-shape extending about said vertical axis.

107. (New) The spacer of claim 106 wherein the cylindrical-shaped peripheral sidewall extends continuously about said vertical axis.

108. (New) The spacer of claim 84 wherein said body comprises a cylindrical body extending along a vertical axis, and wherein the peripheral sidewall has a cylindrical-shape extending about said vertical axis; and

wherein said vertebral bearing surfaces are defined by opposite end surfaces of the cylindrical-shaped peripheral sidewall; and

wherein the opposite end surfaces of the peripheral sidewall in the first configuration each define said first bearing surface area; and

wherein the opposite end surfaces of the peripheral sidewall in the second configuration each define said second bearing surface area that is significantly greater than said first bearing surface area.

109. (New) The spacer of claim 108 wherein the cylindrical-shaped peripheral sidewall extends continuously about said vertical axis.